

# PRELIMINARY STUDIES ON THE MISOPHONIC SYNDROME IN ITALY: TRIGGER SOUNDS AND FREQUENCY

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## Abstract

*The following research project aims at increasing knowledge and understanding of the misophonic disorder as well as detecting the most frequently occurring trigger sounds through the examination of a sample of university students. This first fundamental step allows to outline the scope of intervention for a subsequent identification of the most effective psycho-pedagogical protocols.*

*The survey was conducted on a sample of 992 students from the University of Salerno, who were asked to take the Duke Misophonia Questionnaire. In order to identify the main trigger stimuli present, an examination was made of the first item, which features a list of sounds that can potentially spark context-inappropriate reactions. Additional answers provided by participants in the "Other" section of the same item were also investigated, with the purpose of identifying additional recurring trigger sounds that were not included in the proposed list. The study found that at least one trigger sound could be observed in over half of the sample. Furthermore, the main activating stimuli that emerged from the analysis of the collected data related not only to chewing but also to mouth sounds other than chewing, as well as to repetitive and nasal sounds.*

*Such surveys are instrumental for research on misophonia as, building on this preliminary investigation, further in-depth studies could be carried out in order to see which strategies misophonic subjects spontaneously implement to deal with discomfort, find out which of these strategies work and which do not, and finally identify which neuroscience-oriented strategic psychotherapy techniques might be most effective in treating misophonic symptoms.*

**Keywords:** *misophonia, trigger sounds, strategic psychotherapy, survey research*

## Introduction

The present exploration is the result of the collaboration between CIPPS<sup>1</sup> -International Centre of Psychology and Strategic Psychotherapy- and the Chair in Special Education and Special Pedagogy

<sup>1</sup> CIPPS is the first European center focused on integrating strategic psychotherapy and psychosocial genomics, while also being a neuroscience-oriented postgraduate school in strategic psychotherapy, a clinical center and an international research institution. A permanent research and clinical laboratory on misophonia, which also offers a counseling and support desk service for misophonic patients, has been active at CIPPS since 2020.

8 at the University of Salerno, as part of the research project *Misophonia: from a theoretical approach to psycho-pedagogical and educational implications*.

In 2022, an initial preliminary survey (Rosenthal, 2022) was conducted with the purpose of collecting data on the most recurrent symptoms of misophonia as well as to delve into any new emerging traits not yet explored in the existing literature, such as the analysis of the relationship between anxiety and the misophonic disorder. Furthermore, within this preliminary investigation, the research team also decided to implement a specific assessment methodology that involved the use of the Duke Misophonia Questionnaire, the Duke Misophonia Interview and the design of a specific checklist that could help identify the features of trigger stimuli and patients’ reactions to them (Guetta, 2022; Rosenthal, 2021).

To follow up on the pilot study and in light of the current state of the international scientific literature on misophonia (Cavanna & Seri, 2015; Ferrer-Torres & Giménez-Llort, 2022), this research aims at increasing knowledge and understanding of the misophonic disorder and at identifying the most frequently occurring trigger sounds in the sample of 992 university students surveyed. In the long-term perspective, moreover, pinpointing objective diagnostic criteria in order to better define the comorbidity and differential diagnosis of misophonia with other disorders, both at the psychological and organic levels, will also be a useful step to be taken for studies and research on this disorder to hopefully result in the identification of possible effective strategies in clinical intervention.

Research Problem

The term misophonia, literally hatred of sound, is used to designate a neurobehavioral syndrome characterized by heightened autonomic nervous system arousal and negative emotional reactivity (Brout, 2018) in response to certain repetitive sounds or to specific sounds made by human beings (Schroder, 2013).

In a more recent study conducted by Swedo et al (2022), through the work of the Misophonia Consensus Committee, composed of experts with different backgrounds in the field (audiology, neuroscience, psychology, psychiatry), a consensus definition was reached through the use of the modified Delphi method. The committee considered it more appropriate in the definition of misophonia to use the term “disorder” rather than “condition” or “syndrome,” as it more accurately describes the negative experience of misophonic (Swedo et al. 2022).

Examples of sounds, which are referred to as “trigger” sounds as they lead to the triggering of negative reactions, are typically linked to human actions related to chewing or to sounds produced by objects (Jastreboff & Jastreboff, 2001; Edelstein, 2013; Schröder, 2013; Wu, 2014; Kumar, 2017; Schwartz, 2011).

More specifically, triggers that can set off negative reactions can consist of actions such as coughing, breathing heavily, slurping, clicking with a pen, typing on a computer keyboard, scratching with a pencil, or they can occur with sounds such as water dripping or paper being rippled (Jastreboff & Jastreboff, 2001; Edelstein, 2013; Schröder, 2013; Wu, 2014; Kumar, 2017; Schwartz, 2011).

After being exposed to such sounds, individuals with misophonia may react with responses ranging from irritation to extreme anger, including anxiety, disgust, avoidance, escape behavior, and experience a feeling of being overwhelmed by auditory stimuli. Additional symptoms reported by misophonic individuals also encompass a feeling of pressure in the chest or head, muscle tension, and in some cases, even increased heart rate, sweating, and shortness of breath (Edelstein, 2013).

For some individuals, this disorder can result in severe repercussions in the occupational, interpersonal and academic spheres and contribute to the development of behavioral issues (Brout, 2018). As observed by Schwartz (2011), individuals with misophonia often become alienated from the people they are surrounded by, which may lead to withdrawal from relationships, loss of employment and, ultimately, social isolation. Indeed, in the most severe cases, misophonic subjects might get to the point of avoiding specific milieus, such as the workplace, school settings or family environments, in order to prevent exposure to the trigger stimulus, which causes difficulties in establishing or maintaining interpersonal relationships. Moreover, it seems that the relational dynamics between the misophonic patients and their significant others, i.e., mothers, fathers, child-

ren, sisters and so on have a major impact on the triggering of misophonic reactions. This would imply that reactions are all the more intense if the trigger sound is produced by significant people (Tyler, 2014; Rosenthal, 2022).

According to literature, it is not currently possible to definitely ascertain the causes that produce discomfort in response to trigger sounds. To date, studies have explored neurobiological patterns associated with misophonia. For instance, Kumar's studies (2017) argue that misophonic patients present an increased activation of the insular cortex in the anterior portion, which appears to be linked to memory and associative learning processes, as well as an abnormal functional connectivity with regions responsible for the regulation and processing of emotions, such as the ventromedial prefrontal cortex, the posteromedial cortex, the amygdala and the hippocampus. By conducting a study that involved the use of audiovisual techniques on misophonic subjects exposed to trigger sounds, Schröder *et al.* observed functional activation of the right insula, the right anterior cingulate cortex and the temporal cortex (Schröder, 2019). Furthermore, it seems interesting to point out that most of the triggers are related to orofacial actions such as chewing, which allowed Kumar to hypothesize that the mirror neuron system could play a role in misophonia.

In view of the complexity of the phenomenon, this research is thus intended to provide initial guidance towards a more accurate understanding of the misophonic disorder and the related trigger sounds. Therefore, what are the most widespread trigger sounds? How do these affect relational dynamics and, consequently, well-being in social settings, such as a university classroom? Investigating the most common trigger sounds and possibly identifying others not yet recorded is crucial for hypothesizing targeted intervention strategies and building inclusive environments.

### *Research Focus*

An initial review of the existing literature revealed a paucity of research studies and publications addressing the clinical treatment of misophonic people in psychology. Among the studies that were examined, the work conducted by Professor Antonio Imbesi's team (Imbesi, 2022) was deemed to be of particular significance both at the Italian and international level (Imbesi, 2022) as it is aimed at analyzing the main studies on the treatment of misophonia in order to understand, through cognitive-behavioral protocols, its modalities and effectiveness as well as to orient future studies. Following the PRISMA method, a systematic review, including English-language studies from the past 10 years, was conducted through major search engines. The keywords used referred to the concept of misophonia/sound sensitivity and the related treatment/therapy and the results obtained offered insights into the practices to be employed for the treatment of misophonia. Among them, cognitive-behavioral techniques seem quite likely to become the gold standard, since, through integration with pharmacological treatment and neurophysiological exercises, they point to long-term improvements.

Among the preliminary investigations undertaken by our research team and focused on the epistemological framework, important insight resulted from the exploration of the relationships among misophonia, stress, traumatic events throughout life and traumatic stress (Guetta, 2024).

In this regard, significant positive correlations were observed among perceived stress, traumatic stress and misophonia severity. However, multivariate analyses revealed that perceived stress significantly predicts misophonia severity, over and above traumatic stress symptoms. The number of adverse life events is not associated with misophonia severity. "Among symptom clusters of post-traumatic stress disorder, only hyperarousal is associated with misophonia severity. These findings suggest that transdiagnostic processes related to stress, such as perceived stress and hyperarousal, may be important phenotypic features and possible treatment targets for adults with misophonia" (Guetta, 2024).

In light of the above observations, this research project aims at expanding current knowledge and understanding of this disorder in its symptomatological facets by examining a sample of university students and detecting the most frequent triggers. The purpose is to delineate the areas of intervention in order to then define effective clinical protocols and raise greater awareness about misophonia-related discomforts in educational settings as well.

General Background

The present research stemmed from the need to deepen knowledge about misophonia, in view of the large number of applications received at the CIPPS counseling and support desk from individuals who had reported discomfort in response to certain specific types of sound, showing reactions that could be ascribed to the misophonic disorder.

The intent of the investigation was to thus obtain further information that could help gain a more accurate understanding of the characteristics to be found in misophonic patients, of the solutions attempted with regard to the management of trigger sounds and of any functional strategies implemented, providing therapists with more elements available in order to devise an accurate clinical intervention for each patient.

In view of the many requests received and the lack of tools to address them in an effective way, an exploratory research design was devised and structured as part of the research project *Misophonia: from a theoretical approach to psycho-pedagogical, and educational implications*. It aimed at gathering more detailed information about the misophonic disorder and about individuals’ perception of sounds deemed most bothersome, so as to envision possible effective treatment strategies to be tested in later stages of the research project.

To achieve this goal, the team administered the Duke Misophonia Questionnaire to a sample of university students. This questionnaire was specifically chosen on the grounds that it is regarded as the first psychometrically validated self-report questionnaire on misophonia by the international scientific community. The DMQ relies on factor analytic procedures combined with IRT in an English-speaking sample and can be used as a total score, with composite scores of symptom severity or difficulties coping, or subscales can be used individually.

The team translated the questionnaire in accordance with the Guidelines for the translation and adaptation of the tests and is currently in contact with Dr. Michela Fazi of the Marconi University who is taking care of the validation in Italian for her project doctorate. The questionnaire was taken on a voluntary and anonymous basis by 992 university students, which made it possible to survey a large number of subjects in a short period of time and collect a significant amount of data.

Sample

The sampling took place randomly among students of the specialization course at the University of Salerno during the academic year 2022-23. The exploratory research involved 846 university students from specialization courses in educational support activities for students with disabilities in kindergartens, primary schools and lower secondary schools, 120 students in their first year of the Bachelor of Medicine, and 26 students attending other degree courses, totaling 992 participants enrolled in the 2022-2023 academic year at the University of Salerno.

The sample consisted of 849 women, 141 men and 2 non-binary people. The students’ average age was 36, and the main geographical area of origin was southern Italy. The sample was not divided into non-mysophonic and mysophonic.

Instrument and Procedures

In order to pursue its goal, the team used the Duke Misophonia Questionnaire, as it has proven to be one of the most relevant and effective tools within literature; more specifically, the study of trigger sounds was performed through the analysis of the first item and the additional answers provided by respondents in the “Other” section. The Duke Misophonia Questionnaire, devised by Dr. Rosenthal’s team at Duke University, is the first psychometrically validated Misophonia self-report measure using factor analytic procedures combined with IRT in an English-speaking sample.

The questionnaire was instrumental in identifying which of the listed sounds, as potential triggers of inappropriate reactions within a given context, bother respondents more intensely than

they normally bother other people when being heard or seen produced. By submitting a detailed list of 14 trigger sounds to choose from and giving participants the option to add more, the Duke Misophonia Questionnaire made it possible for subjects to be as accurate as possible in their answer—as they were able to select the cases that matched their own experience—and consequently allowed the team to detect which trigger sounds recurred most (Rosenthal at al., 2021).

The first examined question for participants to answer (Yes/No) was presented as follows:

**Table 1**  
*Excerpt from the DMQ Used for the Survey*

Please indicate whether the following sounds and/or sights bother you much more intensely than they do most other people.	Yes	No
1- People making mouth sounds while eating or drinking (e.g., chewing, crunching, slurping).		
2- People making nasal/throat sounds (e.g., sniffing, sneezing, nose-whistling, coughing, throat-clearing).		
3- People making mouth sounds when not eating (e.g., making the “tsk” sound, heavy breathing, snoring, whistling).		
4- People making repetitive sounds (e.g., typing, tapping nails on table, pen clicking, writing, construction work, using machinery).		
5- Rustling or tearing objects.		
6- Speech sounds (e.g., “p” sounds, hissing “s” sounds, someone speaking with a lisp, high-pitched voices).		
7- Body or joint sounds (e.g., snapping fingers, cracking joints, jaw clicking).		
8- Rubbing sounds (e.g., hands on pants, hands against one another, Styrofoam rubbing together).		
9- Stomping or loud walking (e.g., heels clicking, flip flops, etc.).		
10- Muffled sounds (e.g., voices separated by a wall, TV /music in another room).		
11- People talking in the background (e.g., phone calls in public, many people talking at once).		
12- Repetitive or continuous sounds not made by a person (e.g., clock ticking, air conditioner humming, water running).		
13- Animals making repetitive sounds (e.g., licking, chirping, barking, eating, drinking).		
14- Seeing someone making or about to make a sound that bothers you, even if you can’t hear it (e.g., seeing someone reach into a bag of chips, seeing someone eating on TV with the volume off).		
15- Other (please describe):		
16- There are no specific sounds that bother me much more than they do other people.		

As shown, subjects in the sample were therefore asked to point out which sounds on the list caused them discomfort, and which did not. Each respondent could thus indicate more than one trigger sound.

The “Other” section was examined separately from the other trigger sound options included in the questionnaire list and the related answers provided by the sample subjects; this was done in order to investigate the number and type of the answers received, so as to observe whether the same additional bothersome sounds were reported by multiple participants. Through clustering by similarity, a semantic analysis of the results obtained was then carried out to see whether other categories of trigger sounds should be added to the list along with those already featured.

The data collected from the Duke Misophonia Questionnaire were analyzed to identify the most frequently reported trigger sounds among the sample of 992 university students. The analysis focused on both the predefined list of triggers provided in the questionnaire and the additional responses submitted in the “Other” section.

Responses to each predefined trigger sound were tallied, and their prevalence was calculated as percentages of the total sample. The main categories analyzed included sounds associated with chewing, repetitive sounds, nasal sounds, and other mouth-related noises. Descriptive statistics were used to summarize the distribution of responses, highlighting the most frequently indicated triggers.

Additional responses from the “Other” section were grouped and semantically analyzed to identify recurring themes and similar answers were clustered to determine new categories of trigger sounds not included in the predefined list. A frequency analysis of these additional responses provided insights into less commonly studied triggers, such as “chalk on a blackboard” or “cutlery on plates”.

Results were compared with findings from prior studies on misophonia to assess consistency and identify novel insights. The focus was on examining the overlap between the most reported triggers in this study and those documented in the existing literature.

Research Results

The sample surveyed suggests that most of the subjects are likely to be responsive to one or more trigger sounds. In particular, over half of the participants were found to be sensitive to at least one sound deemed to be a source of discomfort, whereas the main triggers emerged related not only to chewing but also to mouth sounds other than chewing, as well as to repetitive sounds and nasal sounds.

The following table shows the number of answers received with regard to the various trigger sounds included in the first item of the questionnaire analyzed by the team.

**Table 2**  
*Distribution of the Answers Given by the 992 Participants*

Triggers	Percentage	Number of people
Chewing sounds while eating	66.33	658
Nasal sounds	40.12	398
Mouth sounds	59.88	594
People making repetitive sounds	45.46	451
Rustling or tearing objects	27.22	270
Speech sounds	18.45	183
Body or joint sounds	21.17	210
Rubbing sounds	20.56	204
Stomping or loud walking	26.11	259
Muffled sounds	21.77	216
People talking in the background	42.44	421

Triggers	Percentage	Number of people
Repetitive sounds not made by a person	34.58	343
Animals making repetitive sounds	16.53	164
Seeing someone making or about to make a sound that bothers you, even if you can't hear it	14.62	145

This exploratory research also focused on the analysis of the “Other” section, which was still part of the first item of the questionnaire. This specific segment gave the sample subjects of university students the opportunity to add any further bothersome sounds not mentioned in the list. Also, each respondent could give more than one answer.

The “Other” section was then investigated separately from the other trigger sound options included in the questionnaire list; this was done in order to examine the number and type of the answers received, thus highlighting whether the same additional bothersome sounds were reported by multiple participants. Therefore, semantically equal answers were grouped together to check whether other categories of trigger sounds should be included in the list in addition to those already present.

A total of 236 people, accounting for 23.79% of the respondents who took part in the survey, added extra content. The remaining 756, representing 76.21% of the whole sample, did not provide any answers to this section. Out of the aforesaid 236 subjects, 30 analysis units provided non-relevant answers, as they simply wrote “No,” “Nothing” or “None”. On the other hand, 156 people reported only one example of an additional trigger sound, 37 indicated two examples of additional bothersome sounds, 10 people proposed three, one person indicated four and 2 people provided five examples.

The semantic analysis of the collected information revealed several overlapping answers, as shown in the table below.

**Table 3**  
*Distribution of the Answers Provided by the 236 Subjects*

Additional triggers	Frequency
Chalk on a blackboard	22
Cutlery on plates	18
Rubbing materials	15
Volume of devices	14
Nails on a blackboard	12
Vehicle horns	10
Forks	9
Traffic	8
Eating/chewing with open mouth	7
Loud voice	7
Screaming	6

Additional triggers	Frequency
Snoring	6
Nails on materials	6
Wind	6
Vehicle sounds	6
Arguing sounds	5
Teeth grinding	5
Loud music	5
Non-relevant answers	30

More specifically, to give a few examples, chalk on a blackboard, cutlery on plates and the sound of rubbing materials, such as metal material rubbing against other metal material, were the additional entries most mentioned as bothersome sounds.

The analysis of the data collected highlights that 66.33% of the sample reported discomfort in response to a particular trigger, that is, discomfort associated with chewing during meals. The table below shows the sounds that were perceived as most bothersome by the participants.

**Table 4**  
*Triggers Most Frequently Indicated by the Sample*

Triggers	Percentage	Number of people
Chewing sounds while eating	66.33	658
Nasal sounds	40.12	398
Mouth sounds	59.88	594
People making repetitive sounds	45.46	451
People talking in the background	42.44	421

This result is consistent with previous studies and is likely to corroborate the assumption that misophonia is most often linked to trigger sounds involving orofacial actions (Jager, 2020).

The most indicated trigger sound was the one related to discomfort associated with chewing during meals. This outcome suggests that it might be advisable to both design interventions specifically aimed at this setting, i.e., mealtime, as well as implement a psycho-pedagogical intervention targeting the entire family system in terms of how to manage mealtime and what strategies to adopt. Furthermore, as literature points out that reactions are heightened when the trigger sound is produced by significant people (Tyler, 2014; Rosenthal, 2022), it might also be helpful to look into the connection between the presence of the familiar person and the moment of the meal. More specifically, studies could be focused on how often meals are eaten in the presence of significant people and whether, at those times, discomfort is strictly linked to the particular person referred to or to other subjects who may also be present.

In addition to that, the large number of subjects in the sample who indicated at least one sound as annoying prompts reflection on the prevalence of misophonia within the population, a factor that may be worth investigating in future research.



International scientific literature highlights that the main misophonic triggers are to be detected among repetitive sounds or specific sounds generated by humans. Thus, our preliminary data appear to be in line with the findings of said studies. What is more, the supplementary answers provided by the participants also point in this direction. Indeed, in the “Other” section of the questionnaire, many of the respondents also mentioned sounds produced by human beings. More precisely, discomfort caused by sounds related to chewing and/or eating with one’s mouth open was referred to in 7 cases, discomfort at people talking out loud recurred in 7 cases as well, discomfort associated with snoring was registered in 6 cases, as was discomfort generated by screaming. With regard to repetitive sounds that are also continuous, on another note, the same section also revealed that in multiple instances, students referred to a number of sounds belonging to this category as generators of discomfort. For example, discomfort produced by chalk on a blackboard recurred in 22 cases, cutlery on plates was mentioned in 18 cases, discomfort at sounds resulting from metal materials being rubbed appeared 15 times, and discomfort generated by the loud volume of electronic devices was brought up in 14 cases.

Discussion

The present work aimed at both pointing out, through the use of a list, the sounds that can trigger reactions that are inappropriate to a given context and at detecting additional recurring trigger sounds that were not included in the proposed list. More than half of the sample was found to have been affected by at least one trigger sound. In addition to that, findings showed that the main stimuli triggering misophonic reactions involve not only chewing but also repetitive and nasal sounds.

These results underline the complexity of misophonia as a condition that goes beyond simple annoyance with sounds, touching upon deeper emotional and relational dynamics. For instance, the prominence of chewing-related triggers raises significant questions about the social contexts in which these reactions are most frequently experienced, such as family meals. This suggests the importance of designing interventions not only for individual coping mechanisms but also for educating families about strategies to manage these interactions constructively.

Furthermore, the semantic analysis of the “Other” section highlighted less commonly reported triggers, such as “chalk on a blackboard” and “cutlery on plates,” emphasizing the diversity and subjectivity of misophonic reactions. These findings open new avenues for research into culturally or individually specific triggers and their underlying neurological or psychological mechanisms.

The data collected provided important elements for our team’s future work: considering the large number of people who responded positively to at least one stimulus among those presented in the list corroborates in the first place the importance of opting for a therapeutic intervention that is strategically tailored to each individual patient, building on his/her/their difficulties and, most importantly, taking into account his/her/their resources. Indeed, this therapeutic approach has been guiding the team’s work since the very first sessions with patients who applied for access at the counseling desk.

In previous studies (Kiliç, 2021), it was found that some misophonic symptoms most commonly reported by those who are affected by misophonia are also commonly reported by those who are not affected by misophonia. The data collected are based on a comparison between a misophonic and non-misophonic population.

Therefore, it should be considered that the sounds that emerged as prevalent in our sample may not be representative as diagnostic criteria of the misophonic population compared to the non-misophonic because the subdivision of our sample into misophonic and non-misophonic subjects was not carried out. This may be a limitation of the survey to be taken into account in future research. Finally, the study’s results have implications for both clinical practice and educational settings. Interventions should prioritize not only symptom management but also fostering environments that minimize exposure to common triggers. In particular, psycho-pedagogical strategies in schools and universities could play a pivotal role in supporting individuals affected by misophonia, promoting both academic success and emotional well-being.

## Conclusions and Implications

Given the data resulting from the present exploratory survey and having compared it with data emerging from the literature and the international scientific community, the team, with a view to future developments, aims to further investigate misophonia, identifying objective diagnostic criteria as well as defining comorbidity and differential diagnosis at the psychological and organic levels. In addition to that, a major goal will be to determine, which techniques of neuroscience-driven strategic clinical intervention prove to be most effective in the treatment of misophonic symptoms.

The results obtained pave the way for an in-depth study of a whole series of aspects, calling first and foremost for the investigation of the strategies adopted by people experiencing discomfort that can be ascribed to the misophonic disorder. The purpose is to strengthen the functional strategies that are being put in place by the patients themselves, following the teachings of Milton Erickson, whose hypnotherapy model focuses on detecting the individuals' own resources, on reinforcing them and on conveying confidence to the patients so that they can identify new resources themselves.

By maintaining the initiative over everything that occurs during the therapy, the strategic therapist takes responsibility for directly and actively influencing the patient's behavior and develops a specific technique for each and every problem.

The aforementioned aspects (diagnostic criteria, strategic clinical intervention techniques and functional strategies) are all the more significant as increasing awareness is shedding light on the extent to which misophonia can affect the quality of life by inhibiting assertive and prosocial relational behaviors and thereby making it difficult to adequately experience intra- and interpersonal relationships. Identifying techniques that could lead to the detection and/or development of effective strategies might help the patient handle trigger sounds in daily life and thus mitigate the reactions related to them, with a view to better coping with meaningful relationships as well.

The meaningful finding emerging from this work, i.e., that 66.33% of the sample reported discomfort in response to a particular trigger, namely discomfort related to chewing during meals, requires the development of interventions specifically targeted to this context and therefore designed to help manage the mealtime, while taking into account the relationship with the significant people present; indeed, the strategic approach seeks to understand the functioning of the patient-system in the totality of the relationships it has with itself, with others and with the macrosystem, primarily focusing on the "here and now".

## Declaration of Interest

The authors declare no competing interest.

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